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Xiang et al.

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(54) **MODULAR LIGHT SYSTEM**

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(51) **Int. Cl.**

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F21V 29/76	(2015.01)
F21V 23/06	(2006.01)
F21V 23/00	(2015.01)
F21V 23/04	(2006.01)
F21Y 115/15	(2016.01)
F21Y 115/10	(2016.01)
F21Y 101/00	(2016.01)

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CPC ***F21S 2/005*** (2013.01); ***F21V 23/003*** (2013.01); ***F21V 23/0442*** (2013.01); ***F21V 23/0464*** (2013.01); ***F21V 23/06*** (2013.01); ***F21V 29/76*** (2015.01); *F21Y 2101/00* (2013.01); *F21Y 2115/10* (2016.08); *F21Y 2115/15* (2016.08)

(58) **Field of Classification Search**

CPC F21S 2/005; F21V 29/76; F21V 23/003; F21V 23/0442; F21V 23/0464; F21V 23/06

USPC 362/235

See application file for complete search history.

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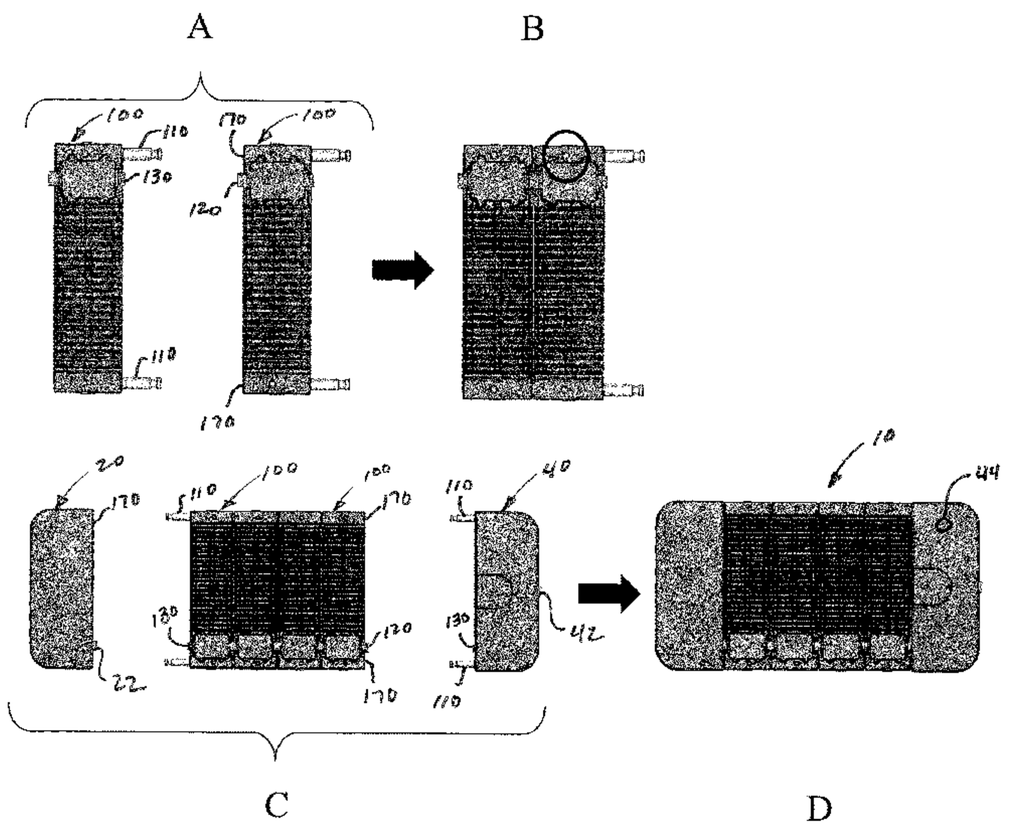
(57) **ABSTRACT**

A modular light system comprising a light module comprising a heat sink having a first side with a first mechanical coupling and a second side with a second mechanical coupling, a solid-state light emitting component connected to the heat sink, and a junction box with a first electrical coupling and a second electrical coupling, at least one being electrically connected to the solid-state light emitting component. The modular light system further comprises a base module removably connected to the first side by the first mechanical coupling and the first electrical coupling, and having a connection for power input to the modular light system to provide power to the solid-state light emitting component. A head module is removably connected to the second side by the second mechanical coupling and the second electrical coupling, and has a power terminal end connector.

29 Claims, 8 Drawing Sheets



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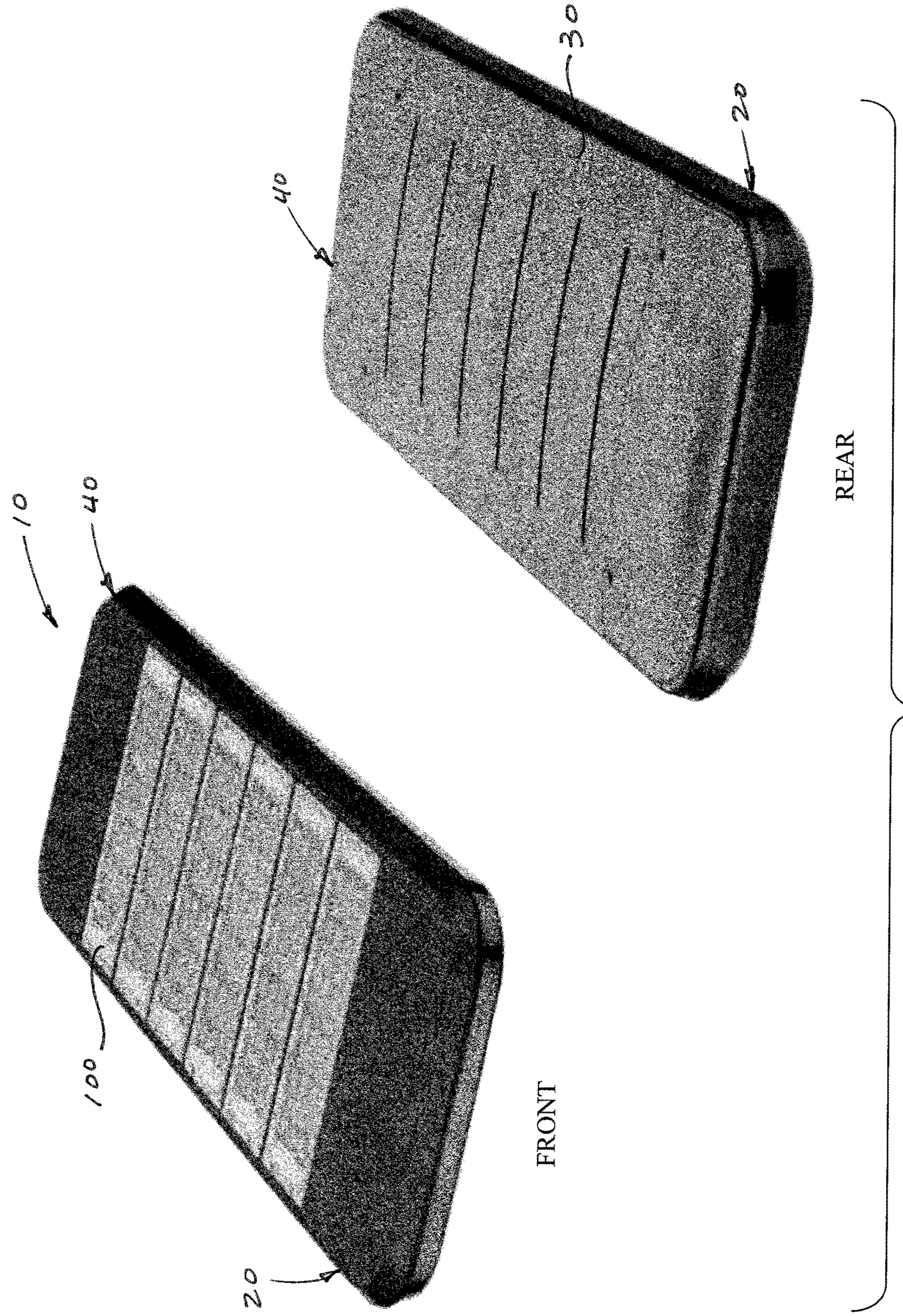


FIG. 1

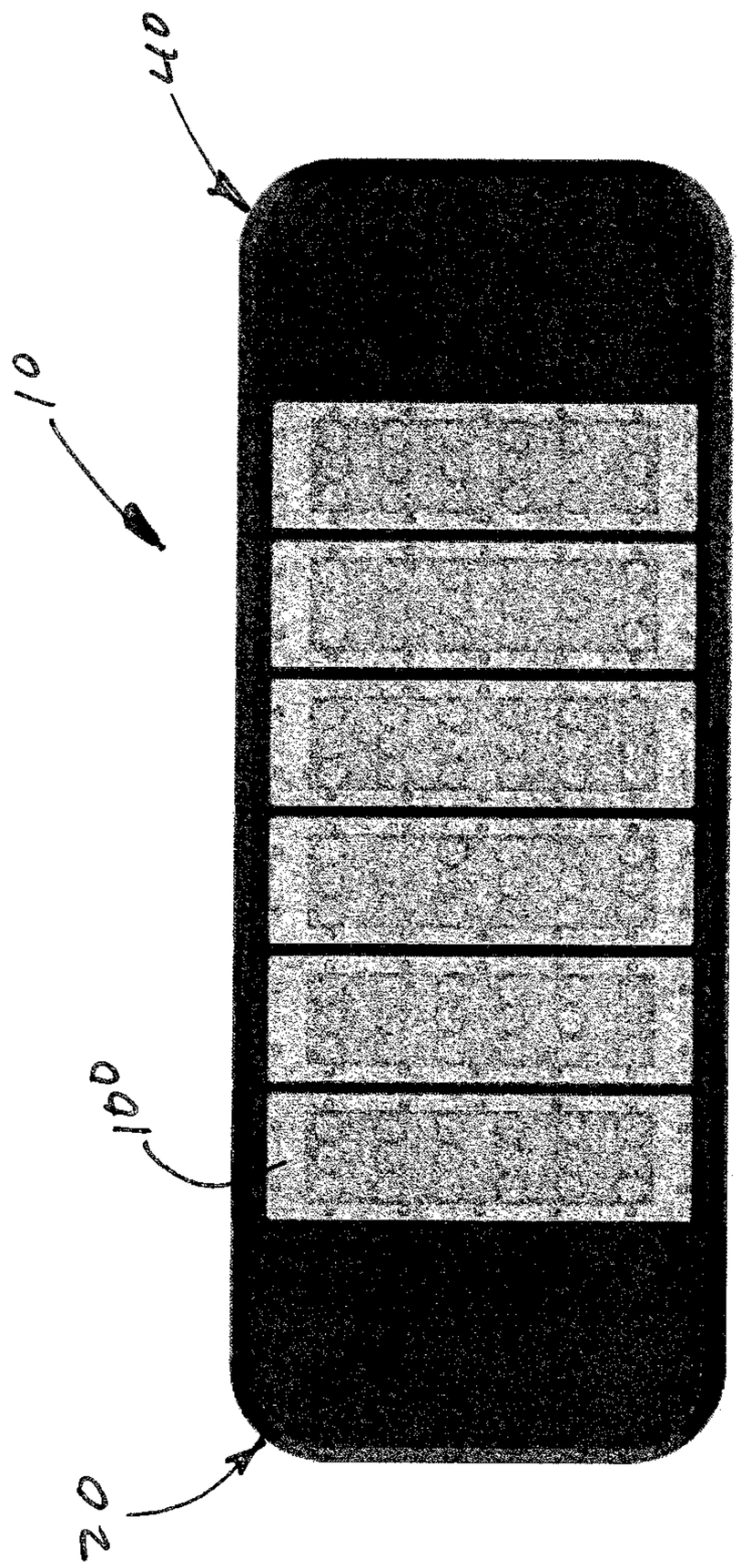


FIG. 2

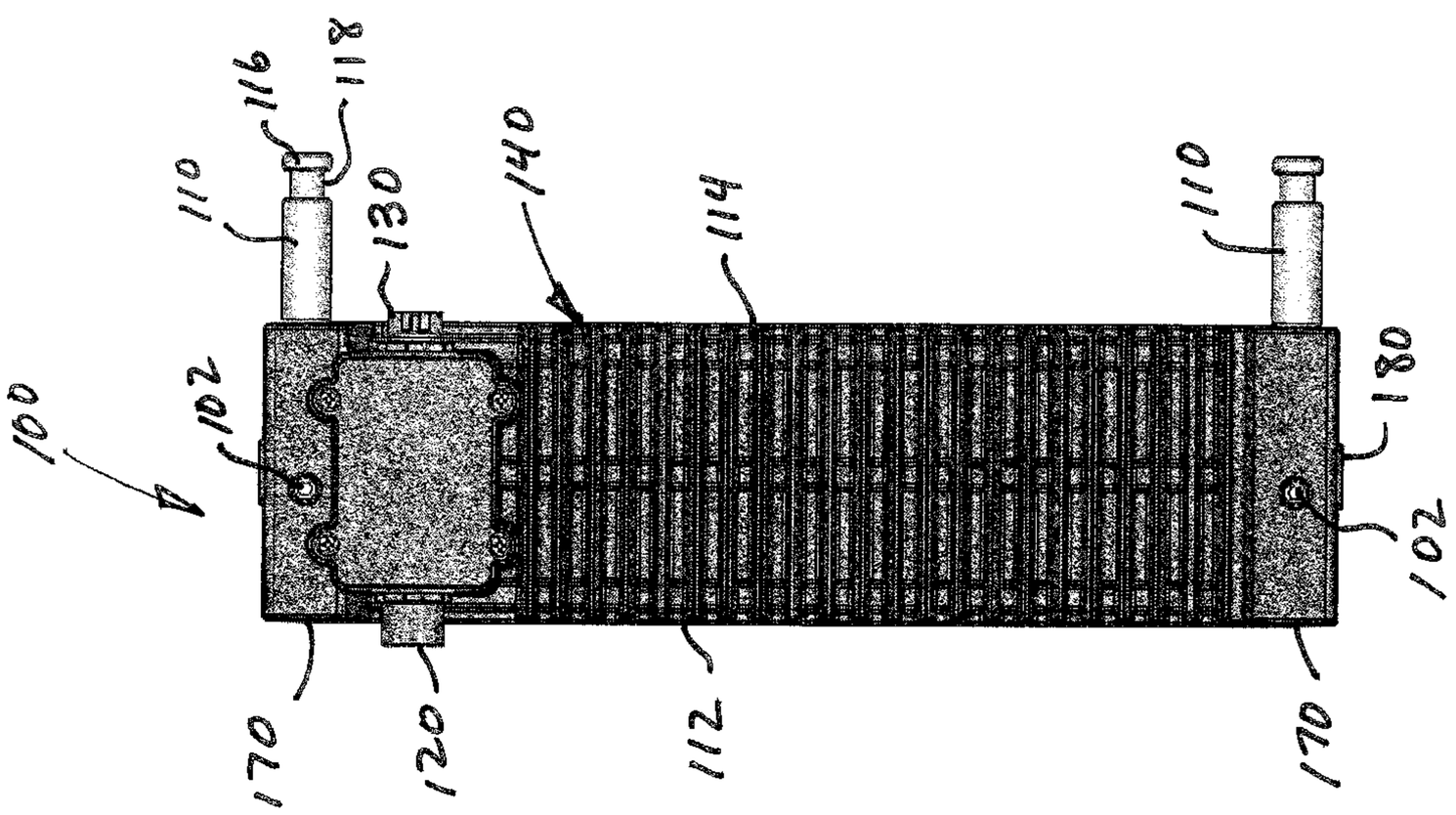


FIG. 3

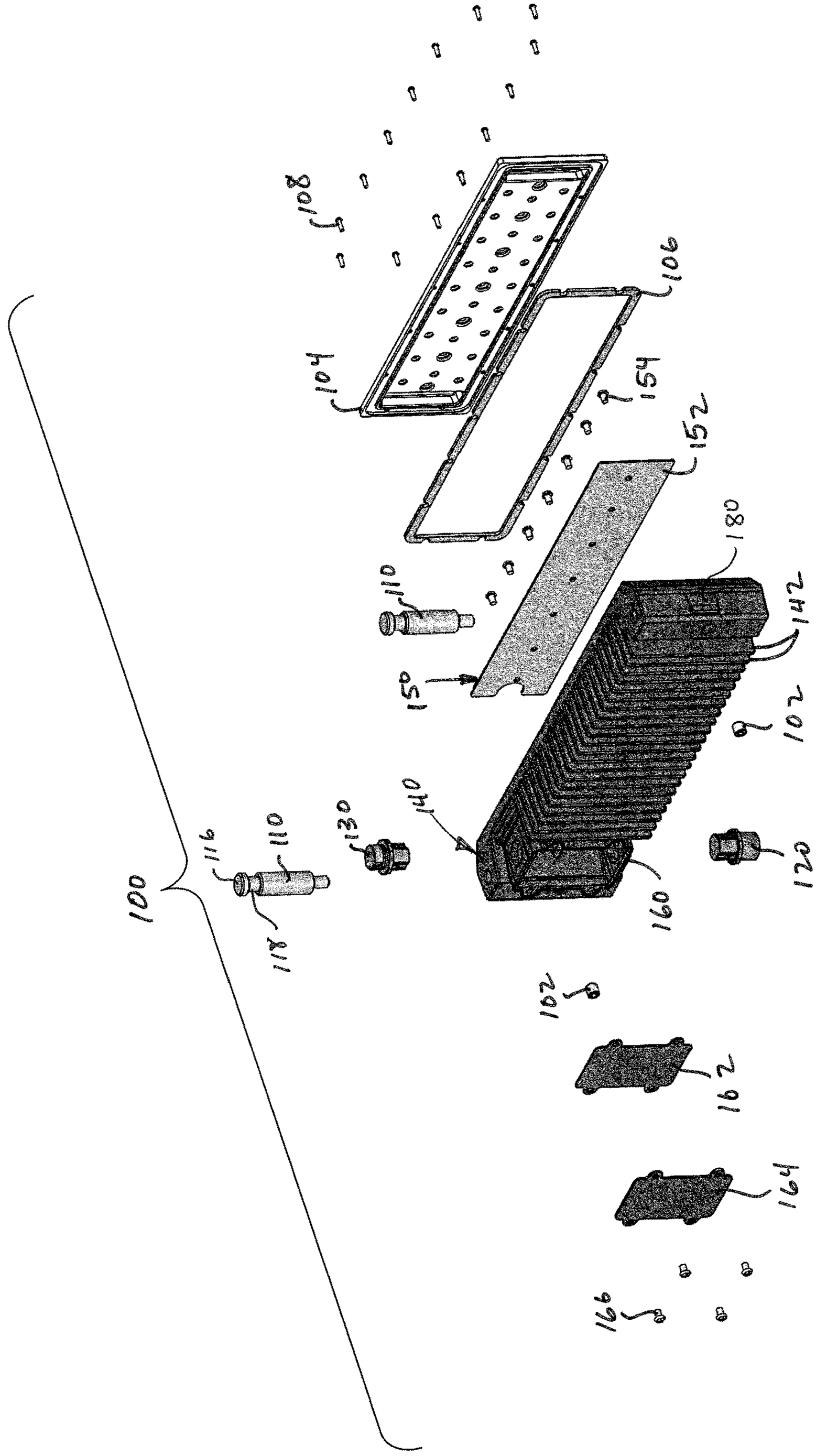

100
108
106
104
154
152
110
150
180
142
102
140
130
116
110
120
160
118
162
164
166

FIG. 4

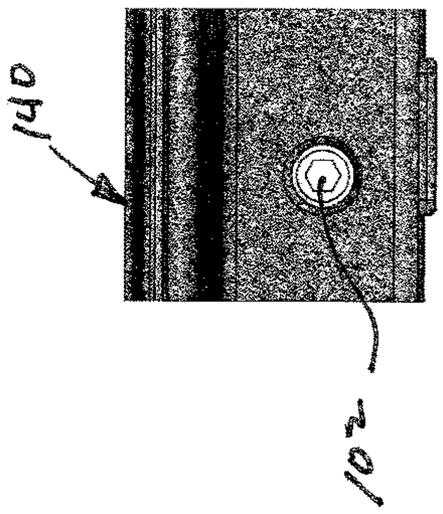


FIG. 6

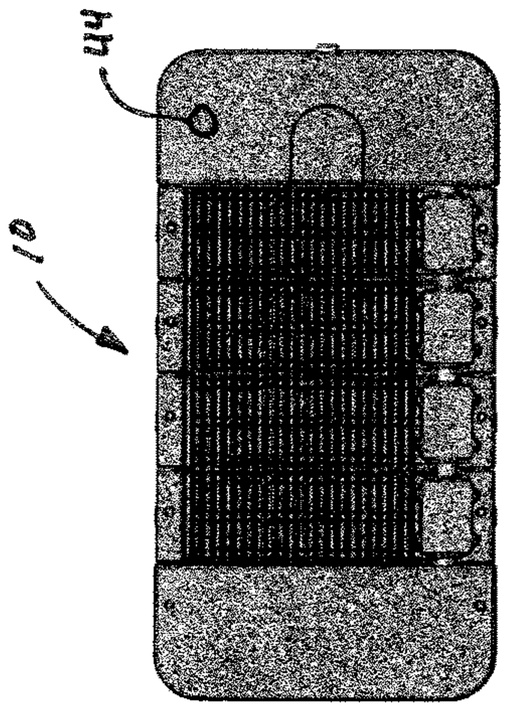


FIG. 5

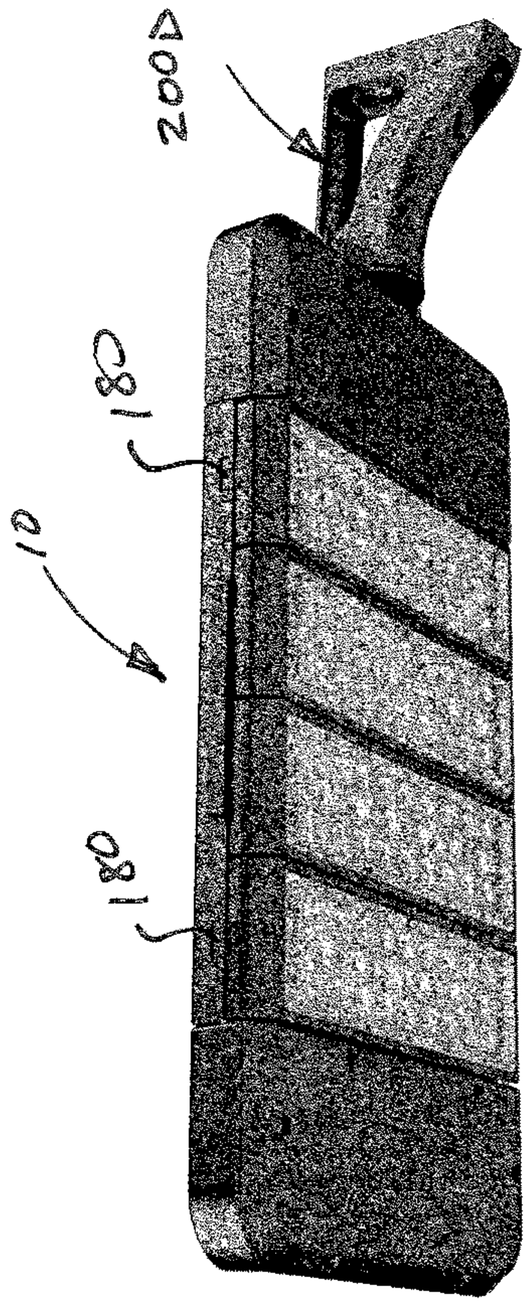


FIG. 8

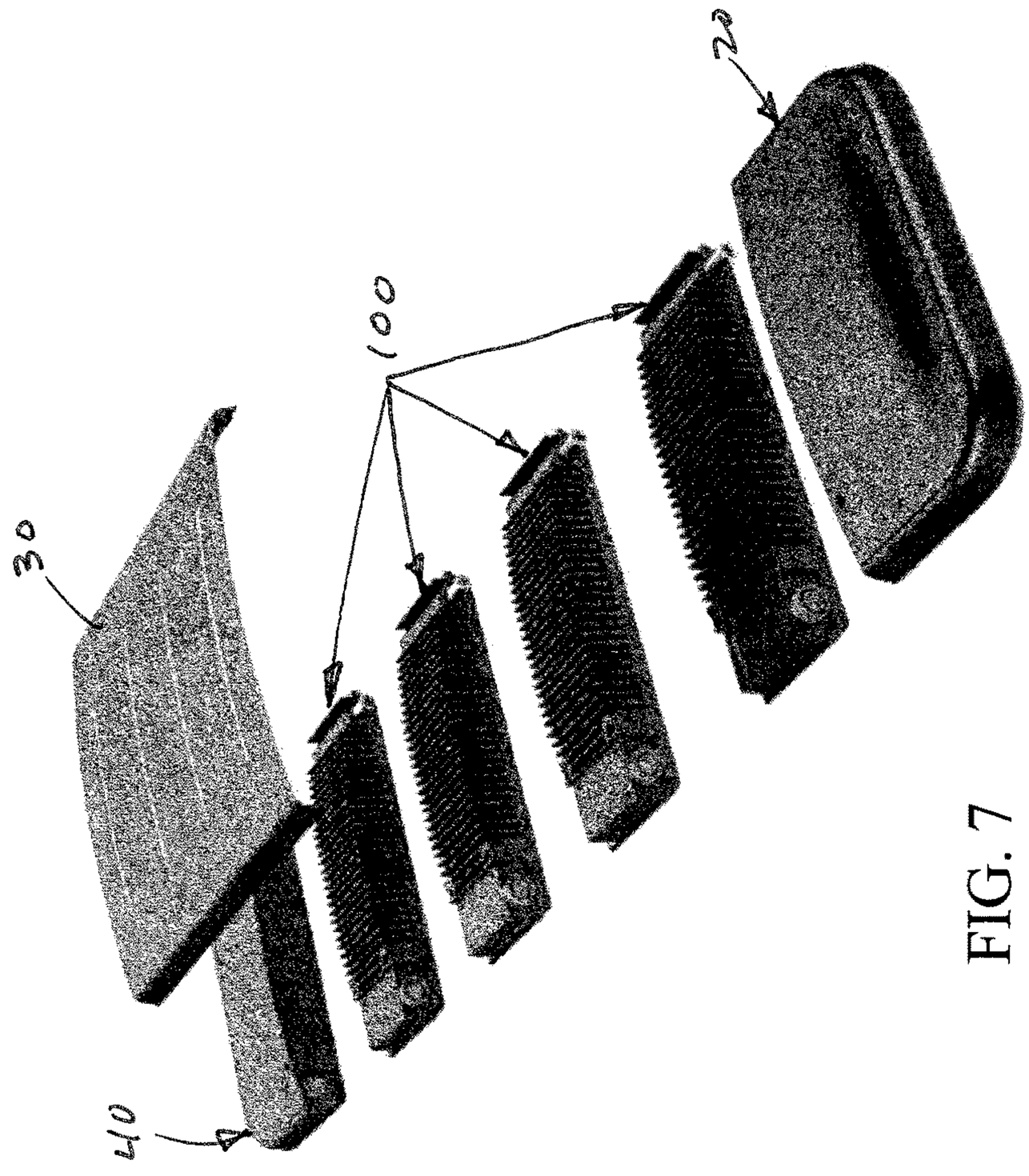


FIG. 7

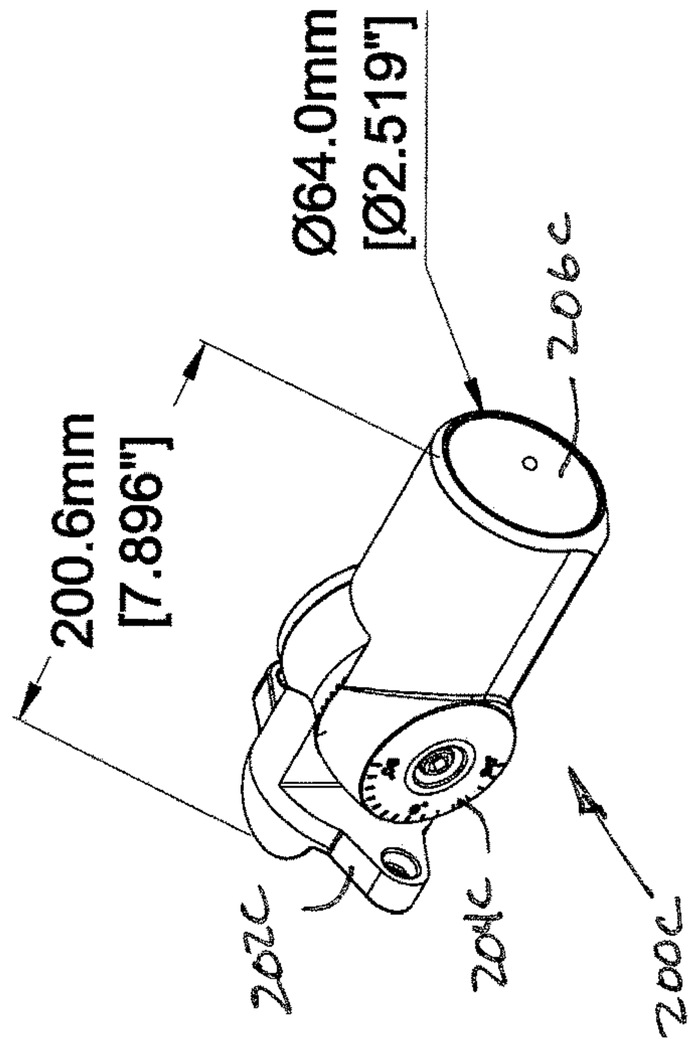


FIG. 9C

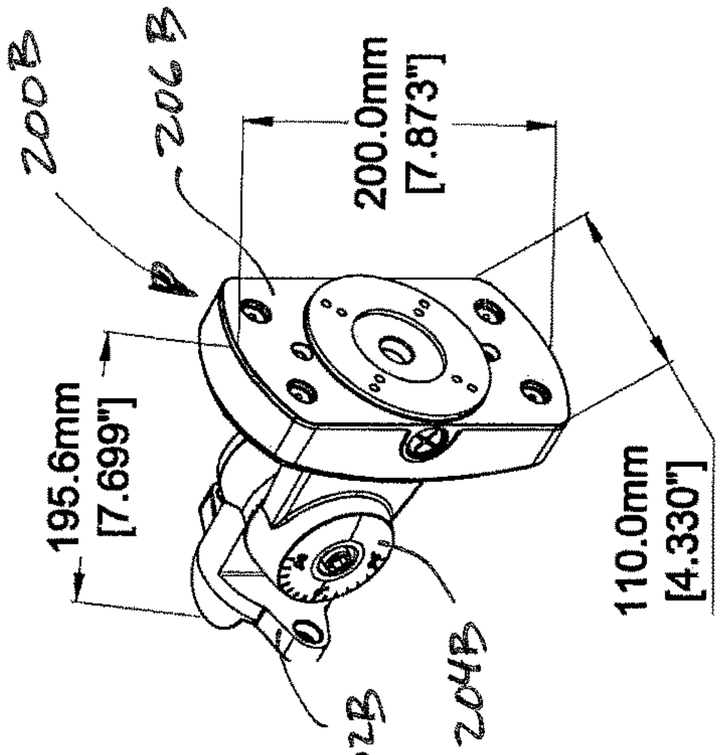


FIG. 9B

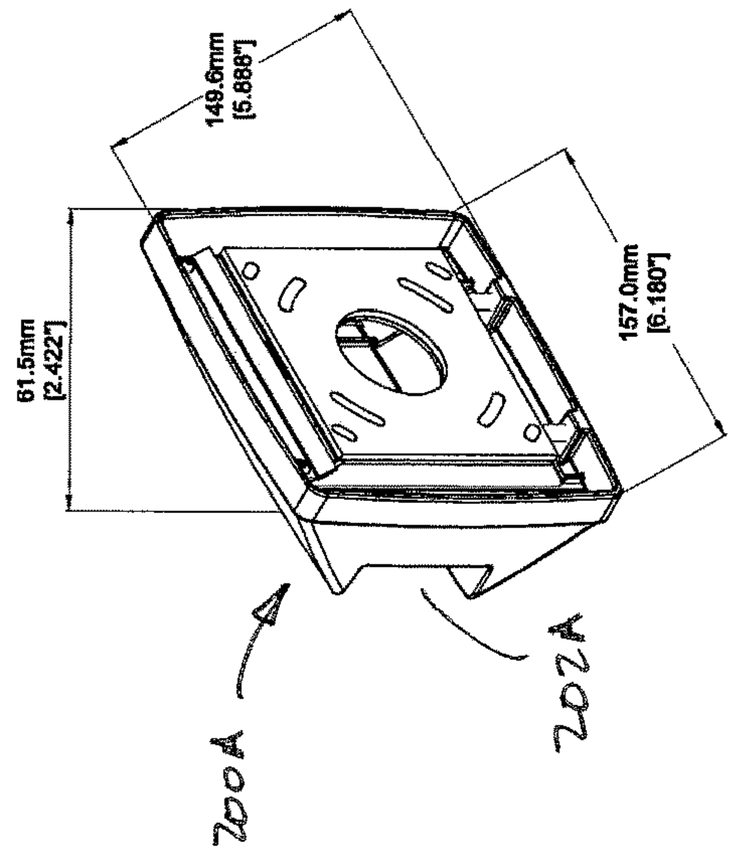
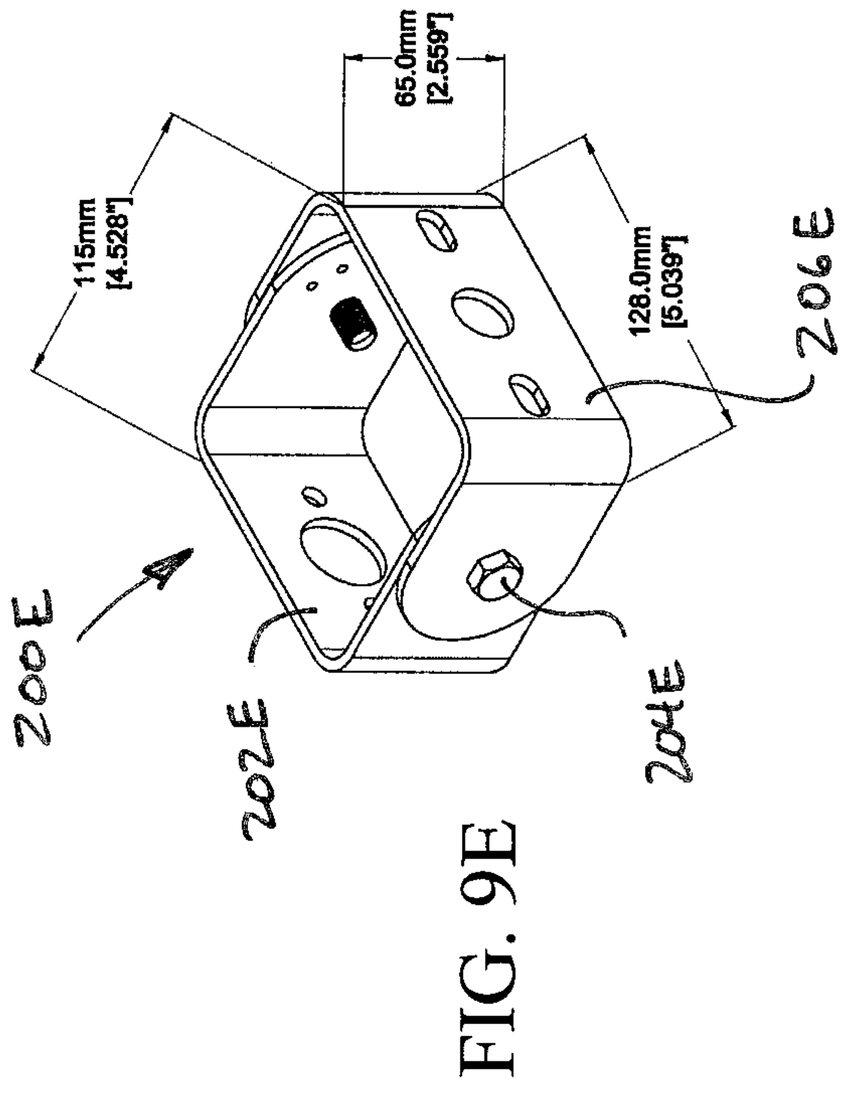


FIG. 9A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[2.559"]
115mm
[4.528"]
126.0mm
[5.039"]
206E
200E
202E
204E

FIG. 9E

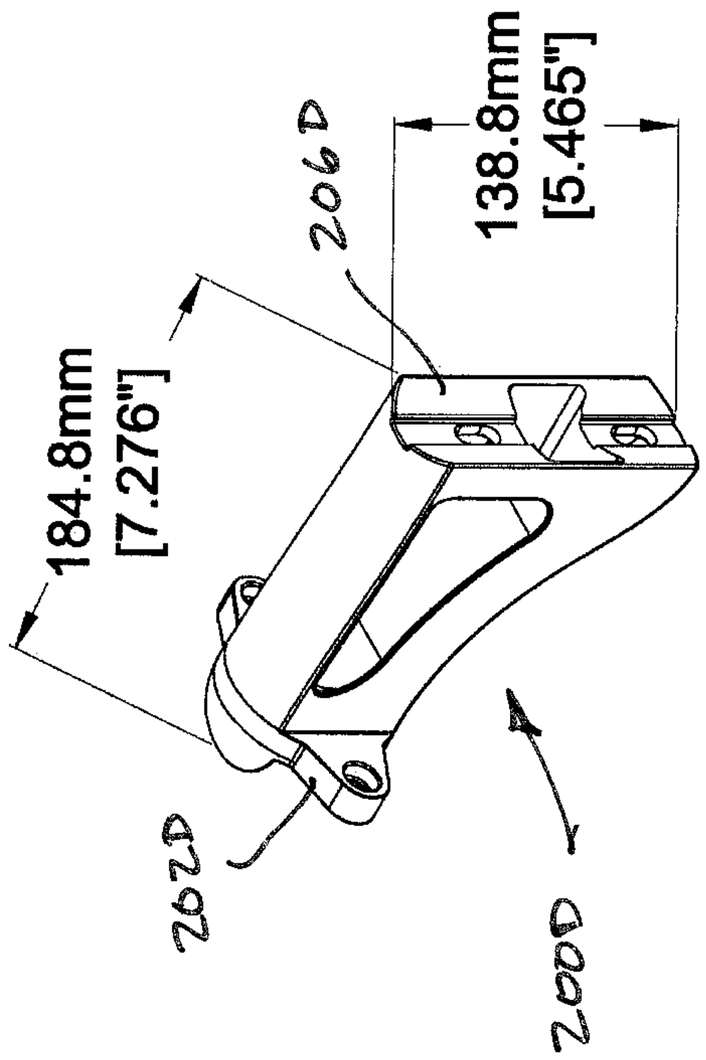
138.8mm
[5.465"]
184.8mm
[7.276"]
206D
202D
200D

FIG. 9D

MODULAR LIGHT SYSTEM

CROSS-REFERENCE TO RELATED APPLICATION

This application claims priority to U.S. Provisional Patent Application No. 62/503,066 filed May 8, 2017, the contents of which are incorporated by reference herein.

FIELD OF THE INVENTION

The present invention relates to improvements to modular light systems.

BACKGROUND OF THE INVENTION

The cost, reliability and energy efficiency of solid-state light emitting devices such as light emitting diodes (LEDs) make such devices a desirable alternative to traditional incandescent, halogen, and other types of light sources. Whether for a new installation, upgrade, conversion or expansion, LED light systems are often the first and best choice for a variety of installation scenarios. However, repair and replacement of faulty or failed components of LED light systems may present issues not associated with other, more traditional types of lighting. For example, incandescent and halogen bulbs are easily replaced. While the cost per-bulb varies based upon size and other parameters, it is usually possible to replace a faulty bulb without having to replace the entire fixture or light system. LED light systems present different issues when it comes to repair and replacement because the light source—typically a plurality of LEDs secured to a printed circuit board—is not an individual component, but rather is comprised of a plurality of different components (e.g., a plurality of LEDs, a printed circuit board, drive circuitry, etc.). When a component in an LED light system fails, it is not uncommon to have to replace the entire system rather than simply the failed component.

Modularity is also an important consideration for new installations, upgrades, conversions or expansions. The ability to provide a light system that is configurable to accommodate various installation size requirements is desirable. For example, for design aesthetics it may be desirable to provide the same light system in a plurality of different sizes. It is also desirable to be able to configure a light system in real-time to accommodate installation constraints.

A modular light system to the assignee herein may be found in U.S. patent application Ser. No. 15/364,461, filed on Nov. 30, 2016, the entire contents of which are incorporated by reference herein.

SUMMARY OF THE INVENTION

The present invention is directed to a modular light system that overcomes the above-described shortcomings in the art. Specifically, in accordance with an embodiment of the present invention, a modular light system is provided that is more flexibly configurable, enabling easy installation, configuration and service. The present invention eliminates the need to discretely wire a plurality of solid-state light modules to assemble a solid-state light system. The present invention advantageously includes mechanical and electrical couplings that make it easy to assemble and disassemble all or part of the inventive modular light system. When assembling, any number of light modules may be mechanically and electrically coupled and connected together by simply coupling complementarily sized and shaped electrical and mechanical couplings on light modules to be assembled together. A head module and a base module, each equipped with similar electrical and mechanical couplings complete the inventive modular light system by bookending the one or more light modules and by providing the necessary electrical and mechanical connections to secure the light modules together and to provide power to the solid-state light emitting components of the light modules. The present invention greatly eases design, configuration, assembly, disassembly, installation, expansion, repair, replacement, retrofit, etc., of light systems for any number of types of installations and applications.

A first embodiment of the present invention is directed to a modular light system comprising a light module comprising a heat sink having a first side with a first mechanical coupling and a second side with a second mechanical coupling, a solid-state light emitting component connected to the heat sink, and a junction box with a first electrical coupling and a second electrical coupling, at least one being electrically connected to the solid-state light emitting component. The modular light system further comprises a base module removably connected to the first side by the first mechanical coupling and the first electrical coupling, the base module having a connection for power input to the modular light system to provide power to the solid-state light emitting component, and a head module removably connected to the second side by the second mechanical coupling and the second electrical coupling, the head module having a power terminal end connector connectable with the second electrical coupling.

The present invention is further directed to a modular light system wherein the first mechanical coupling comprises an aperture defined in the first side of the heat sink and a lock extending at least partially into the aperture.

The present invention is further directed to a modular light system wherein the second mechanical coupling comprises a guide pin extending from the second side of the heat sink.

The present invention is further directed to a modular light system wherein the first electrical coupling is one of a plug and a receptacle, and the second electrical coupling is the other one of a plug and a receptacle.

The present invention is further directed to a modular light system wherein the first electrical coupling is a plug, and the second electrical coupling is a receptacle.

The present invention is further directed to a modular light system wherein the light module further comprises a lens and a gasket connectable to the heat sink to sealingly cover the solid-state light emitting component.

The present invention is further directed to a modular light system further comprising a plurality of solid-state light emitting components.

The present invention is further directed to a modular light system further comprising a mount connected to the base module to secure the modular light system to a support. The mount comprises one of a wall pack mount, a knuckle surface mount, a knuckle slip-fit mount, a pole mount and a trunnion mount.

The present invention is further directed to a modular light system further comprising a sensor in the base module and configured to detect changes in an environmental condition. The sensor may be configured to detect changes in ambient light.

The present invention is further directed to a modular light system further comprising drive circuitry in the head module.

The present invention is further directed to a modular light system further comprising control circuitry in the base module.

A second embodiment of the present invention is directed to a modular light system comprising at least a first and second light module. The first light module comprising a first heat sink having a first side with a first mechanical coupling and a second side with a second mechanical coupling, a first solid-state light emitting component connected to the first heat sink, and a first junction box with a first electrical coupling and a second electrical coupling, at least one being electrically connected to the first solid-state light emitting component. The second light module comprising, a second heat sink having a first side with a first mechanical coupling connected to the second mechanical coupling of the second side of the first heat sink, and a second side with a second mechanical coupling, a second solid-state light emitting component connected to the second heat sink, and a second junction box with a first electrical coupling connected with the second electrical coupling of the first junction box, and a second electrical coupling, at least one being electrically connected to the second solid-state light emitting component. The modular light system of this embodiment further comprises a base module removably connected to the first side of the first light module by the first mechanical coupling and the first electrical coupling, the base module having a connection for power input to the modular light system to provide power to the first solid-state light emitting component, and a head module removably connected to the second side of the second light module by the second mechanical coupling and the second electrical coupling, the head module having a power terminal end connector connectable with the second electrical coupling.

DESCRIPTION OF THE DIAGRAMS

Embodiments of the present invention will now be described with reference to the following diagrams, wherein:

FIG. **1** is perspective front and rear views of a modular light system in accordance with an embodiment of the present invention;

FIG. **2** is a front view of a modular light system in accordance with an embodiment of the present invention;

FIG. **3** is a rear view of a light module of a modular light system in accordance with an embodiment of the present invention;

FIG. **4** is an exploded view of the light module of FIG. **3**;

FIG. **5** is an assembly sequence view of a modular light system in accordance with an embodiment of the present invention;

FIG. **6** is a detail view of a lock for connecting components of a modular light system in accordance with an embodiment of the present invention;

FIG. **7** is an exploded view of a modular light system with four light modules in accordance with an embodiment of the present invention;

FIG. **8** is a perspective front view of a modular light system and mounting bracket in accordance with an embodiment of the present invention; and

FIGS. **9**A-**9**E are mounting brackets for a modular light system in accordance with embodiments of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

The present invention is directed to a modular light system that provides increased flexibility for configuring, installing, retrofitting and repairing light systems.

The present invention will now be described in detail and with reference to the drawings. Referring first to FIGS. **1**, **2** and **8**, front and rear views of a modular light system **10** in accordance with an embodiment of the present invention are depicted. The modular light system **10** includes one or more light modules **100**, a base module **40**, a head module **20**, and a rear cover **30** removably latchable with a cover latch **180** (see also FIG. **4**). The modular light system **10** is mountable to a structure with a mount **200**D, depicted in FIGS. **9**A-**9**E and discussed in more detail below. The modular light system **10** is configurable with one or more light modules **100**, the embodiment of FIGS. **1** and **2** having six light modules **100**, and the embodiment of FIG. **8** having four light modules **100**.

Referring next to FIGS. **3** and **4**, a light module **100** in accordance with embodiments of the present invention will be discussed in detail. The light module **100** is self-contained and is easily connectable with other light modules **100** or with a base module **40** or head module **20** with mechanical and electrical couplings. The light module **100** comprises a heat sink **140** having a plurality of fins **142** and a first side **112** and a second side **114**. The mechanical coupling comprises at least one guide pin **110**, preferably two guide pins **110**, on the second side **114**, with corresponding pin receptacles **170** defined in the first side **112**. As will be appreciated by those skilled in the art, the positioning of the guide pins **110** and the guide pin receptacles **170** may be altered between the first and second sides **112**, **114**, e.g., with one guide pin **110** and one guide pin receptacle **170** being located on each of the first and second sides **112**, **114** for engagement therebetween. The guide pin receptacles **170** and guide pins **110** are complementarily sized and shaped so that the guide pins **110** are receivable in the guide pin receptacles **170** when light modules **100** are connected together, or connected with a base module **40** or head module **20**.

The electrical coupling comprises a receptacle connector **130** and a plug connector **120** extending from opposite sides of a junction box **160**. The receptacle connector **130** extends from a side of the junction box **160** located near the second side **114** of the heat sink **140**, and the plug connector **120** extends from a side of the junction box **160** located near the first side **112** of the heat sink **140**. The receptacle connector **130** and plug connector **120** provide a pass-through electrical connection for power to flow from one light module **100** to another. At least one of the receptacle connector **130** and plug connector **120** also provides power to the light emitting component **150**. The junction box **160** provides an enclosure for the electrical connection between the receptacle connector **130** and the plug connector **120**, and for electrical connection of a light emitting component **150** to one or both of the receptacle and plug connectors **130**, **120**. A gasket **162** and cover **164** are secured to the junction box **160** by a plurality of fasteners **166**, such as screws, to sealingly enclose the junction box **160** and protect the components and connections within the junction box **160** from exposure to external elements (e.g., moisture, debris, etc.).

The light module **100** further comprises a solid-state light emitting component **150** comprising a plurality of solid-state light emitting components **154** connected to, and configured as a circuit on a printed circuit board **152**. Preferably, the

solid-state light emitting components **154** may comprise a plurality of light emitting diodes (LEDs), organic light emitting diodes (OLEDs), and/or polymeric light emitting diodes (PLEDs) arranged in any manner, as a routine matter of design choice. The solid-state light emitting component **150** is electrically connected to one or both of the plug and receptacle connectors **120**, **130**, and mechanically and thermally connected to the heat sink **140**. A gasket **106** and lens **104** are connected to the heat sink **140** with a plurality of fasteners **108**, such as screws, to sealingly enclose the solid-state light emitting component **150** and protect the printed circuit board **152** and solid-state light emitting components **154** from exposure to external elements.

A lock **102**, as shown in FIG. **6**, may be provided with the light module **100**, e.g. in the heat sink **140**, configured to releasably engage a guide pin **110** of a light module **100** or base module **40** when connected together, as discussed in more detail below. The lock **102** may be a set screw or other element that engages part of a head **116** and/or collar **118** of the guide pin **110**, or otherwise blocks removal of the guide pin **110** from the guide pin receptacle **170**.

One or more light modules **100** can be connected together to create a modular light system **10** in accordance with embodiments of the present invention, as shown in FIG. **7**. The present invention advantageously provides flexibility in configuring a light system to accommodate different and varying design constraints and parameters. A modular light system **10** constructed in accordance with embodiments of the present invention contains one or more light modules **100** that are easily assembled and that are bookended by a base module **40** and a head module **20** to complete the modular light system **10**. The present invention provides quick connect/disconnect mechanical and electrical couplings that make it easy to assemble and disassemble one or more components of the inventive modular light system **10**. For example, a modular light system with four light modules **100** is quickly and easily assembled by coupling four light modules **100** together, and by coupling a base module **40** and head module **20**. The light modules **100**, base module **40** and head module **20** are releasably mechanically secured to each other by a releasable lock **102**, and releasably electrically secured to each other by the plug and receptacle connectors **120**, **130**. This assembly sequence is depicted in FIG. **5**. In views A and B, two light modules **100** are coupled together by inserting the guide pins **110** into the guide pin receptacles **170** and securing them in place with the lock **102** that releasably secures the head of the guide pins in place. The receptacle connector **130** of the light module **100** on the left in view A will connect with the plug connector **120** of the light module **100** on the right. This may be repeated for as many light modules **100** as desired to construct a modular light system **10**. Once the desired number of light modules **100** are assembled as described, a base module **40** and head module **20** are assembled, as shown in views C and D. The base module **40** has the same guide pins **110**, and the head module **20** has the same guide pin receptacles **170** as the light module **100**. Guide pins **110** of the base module **40** will be received in the guide pin receptacles **170** of the rightmost light module **100** of view C, and secured in place by the lock **102** of that light module **100**. Similarly, guide pins **110** of the leftmost light module **100** of view C will be received in guide pin receptacles **170** of the head module **20**, and the receptacle connector **130** of that light module **100** will electrically connect with the power terminal end connector **22** of the head module **20**.

The head module **20** may contain drive circuitry (not shown), e.g., a driver, suitable for providing power to the light modules **100** that make up the modular light system **10**. The driver may be configured to convert alternating current power to direct current power useable by the solid-state light emitting components **154**. The drive circuitry is designed and configured to provide the power necessary to drive the number of light modules **100** assembled to comprise the modular light system **10** in accordance with embodiments of the present invention. An inventory of drivers may be maintained to allow for a selection based on the number of light modules **100** being used in the modular light system **10**. In this manner, efficiency may be provided in selecting a driver more-tailored for a particular application. The inventory of drivers may be selected to cover a range of wattage, such as, 50 watts, 100 watts, 180 watts, and 300 watts. As would be apparent to those skilled in the art, the drive circuitry may include sensors or detectors to determine the number of light modules **100** assembled in the modular light system **10**. In addition, or alternatively, the drive circuitry may be designed and configured to provide power and control for a predetermined number of light modules **100**. The head module **20** has a plug connector **22** that connects to the drive circuitry.

The base module **40** also contains a power input **42** via which an electrical connection can be made to provide alternating-current power to the modular light system **10**. The base module **40** may also include control circuitry (not shown) that may include, by way of non-limiting example, a surge protector, sensor circuitry to detect and control power input to the modular light system, and a photovoltaic sensor **44** to detect changes in ambient light and to control operation of the light modules **100** in response to such detected changes. For example, the sensor **44** may detect a decrease in ambient light, indicating the onset of dusk or evening, and in response may cause the control circuitry in the base module **40** to turn on the LEDs **154** of the light modules **150**. Similarly, the sensor **44** may detect an increase in ambient light and cause the circuitry to turn off the LEDs **154**. Optionally, the sensor **44** may be a motion sensor.

Alternating-current power which comes through the power input **42** may be electrically conducted through the plug and receptacle connectors **120**, **130** to the head module **20**, particular to drive circuitry located therein. This electrical conduction can be done through pin and receptacle connections located on the plug and receptacle connectors **120**, **130**. For example, three pin/receptacle connections at each plug/receptacle connector **120**, **130** interface may be utilized to provide, respectively, power supply (hot line), return and ground for the incoming alternate current power. Additional pin/receptacle connections at each plug/receptacle connector **120**, **130** may be provided to carry direct current from the driver circuitry (e.g., driver converted direct current power) to each of the light modules **100** (e.g., two pins at each interface—one direct-current supply and one direct-current return). Further, pin/receptacle connections may be provided at each plug/receptacle connector **120**, **130** to conduct control signals, such as dimming signals, dark/light sensor detection, motion detection, etc.

Optionally, the drive circuitry may be located in the base module **40** and/or within each of the light modules **100**.

It is possible to provide direct-current power, e.g., by a battery pack, in lieu of or in addition to alternating current power, to the modular light system **10** from either externally and/or from within. This may obviate the need for a driver. Emergency battery back-up may be provided to supply direct current in the event of a power failure. By-passing of the driver may be provided for as needed.

The modular light system **10** of the present invention is installable in a variety of configurations (e.g., a variety of number of light modules **100**), and in a variety of locations. A plurality of different mounts are depicted in FIGS. **9**A-**9**E, each of which is fastenable to the base module **40**, and to the structure to which the modular light system **10** is to be secured. For mounting to a flat surface such as a wall, a wall pack mount **200**A, as shown in FIG. **9**A, may be used. A channel **202**A is defined in the mount **200**A that is sized and shaped to receive a part of the base module **40**. The base module **40** is securable to the mount **200**A using screws or other similar fasteners, and the mount **200**A is similarly securable to a wall. Alternatively, a knuckle surface mount **200**B, as depicted in FIG. **9**B, may be used to mount the modular light system **10** to a flat surface. This mount **200**B includes a surface mount part **206**B and a light system mount part **202**B that are connected together by a knuckle part **204**B that enables angular adjustment of the modular light system **10** once the mount **200**B is secured to the surface. The surface mount part **206**B is sized and shaped for mounting to a generally flat surface, and the light system mount part **202**B is sized and shaped to mount to the base module **40**. Similarly, a knuckle slip-fit mount **200**C, as depicted in FIG. **2**C, includes a light system mount part **202**C and a slip-fit mount part **206**C that is sized and shaped to receive and accommodate a pole, peg, or the like. While the interior shape of the slip-fit mount part **206**C shown in FIG. **9**C is circular or tubular, other geometric shapes and configurations are contemplated by, and within the scope and spirit of the present invention. The slip-fit mount part **206**C and light system mount part **202**C are connected together by a knuckle part **204**C that enables angular adjustment of the modular light system **10**. A pole mount **200**D is depicted in FIG. **9**D and includes a pole mount part **206**D and a light system mount part **202**D. The pole mount part **206**D is depicted as being generally arcuate to accommodate a tubular pole. However, the pole mount part **206**D of this embodiment may also be sized and shaped to accommodate a rectangular, square or other geometrically shaped pole. A trunnion mount **200**E is depicted in FIG. **9**E and has a light system mount part **202**E and a surface mount part **206**E. An adjustable pivot **204**E is provided between the light system mount part **202**E and surface mount part **206**E to enable adjustment of the modular light system **10** once it has been installed.

Modifications to embodiments of the present invention are possible without departing from the scope of the invention as defined by the accompanying claims. Expressions such as "including," "comprising," "incorporating," "consisting of," "have," "is," used to describe and claim the present invention are intended to be construed in a non-exclusive manner, namely allowing for items, components or elements not explicitly described herein also to be present. Reference to the singular is to be construed to relate to the plural, where applicable.

What is claimed is:

1. A modular light system comprising:

a light module comprising:

a heat sink having a first side with a first mechanical coupling and a second side with a second mechanical coupling;

a solid-state light emitting component connected to the heat sink; and

a junction box with a first electrical coupling and a second electrical coupling, at least one being electrically connected to the solid-state light emitting component;

a base module removably coupled with the light module by the first mechanical coupling and the first electrical coupling; and

a head module removably coupled with the light module by the second mechanical coupling and the second electrical coupling, the head module having a power terminal end connector connectable with the second electrical coupling.

2. The modular light system of claim **1**, wherein the first mechanical coupling comprises an aperture defined in the first side of the heat sink and a lock extending at least partially into the aperture.

3. The modular light system of claim **2**, wherein the second mechanical coupling comprises a guide pin extending from the second side of the heat sink.

4. The modular light system of claim **1**, wherein the second mechanical coupling comprises a guide pin extending from the second side of the heat sink.

5. The modular light system of claim **1**, wherein the first electrical coupling is one of a plug and a receptacle, and the second electrical coupling is the other one of a plug and a receptacle.

6. The modular light system of claim **1**, wherein the first electrical coupling is a plug, and the second electrical coupling is a receptacle.

7. The modular light system of claim **1**, wherein the light module further comprises a lens and a gasket connectable to the heat sink to sealingly cover the solid-state light emitting component.

8. The modular light system of claim **1**, further comprising a plurality of solid-state light emitting components.

9. The modular light system of claim **1**, further comprising a mount connected to the base module to secure the modular light system to a support.

10. The modular light system of claim **9**, wherein the mount comprises one of a wall pack mount, a knuckle surface mount, a knuckle slip-fit mount, a pole mount and a trunnion mount.

11. The modular light system of claim **1**, further comprising a sensor in the base module configured to detect changes in an environmental condition.

12. The modular light system of claim **11**, wherein the sensor is configured to detect changes in ambient light.

13. The modular light system of claim **1**, further comprising drive circuitry in the head module.

14. The modular light system of claim **1**, further comprising control circuitry in the base module.

15. The modular light system of claim **1**, wherein the base module has a connection for power input to the modular light system to provide power to the solid-state light emitting component.

16. A modular light system comprising:

a first light module comprising:

a first heat sink having a first side with a first mechanical coupling and a second side with a second mechanical coupling;

a first solid-state light emitting component connected to the first heat sink; and

a first junction box with a first electrical coupling and a second electrical coupling, at least one being electrically connected to the first solid-state light emitting component;

a second light module comprising:

a second heat sink having a first side with a first mechanical coupling and a second side with a second mechanical coupling;

a second solid-state light emitting component connected to the second heat sink; and

a second junction box with a first electrical coupling and a second electrical coupling, at least one being electrically connected to the second solid-state light emitting component;

a base module removably coupled with the first light module by the first mechanical coupling and the first electrical coupling; and

a head module removably coupled with the second light module by the second mechanical coupling and the second electrical coupling, the head module having a power terminal end connector connectable with the second electrical coupling.

17. The modular light system of claim **16**, wherein the first mechanical coupling of each of the first heat sink and second heat sink comprises an aperture defined in the first side of each of the first heat sink and second heat sink, and a lock extending at least partially into the aperture.

18. The modular light system of claim **17**, wherein the second mechanical coupling of each of the first heat sink and second heat sink comprises a guide pin extending from the second side of each of the first heat sink and second heat sink.

19. The modular light system of claim **16**, wherein the second mechanical coupling of each of the first heat sink and second heat sink comprises a guide pin extending from the second side of each of the first heat sink and second heat sink.

20. The modular light system of claim **16**, wherein the first electrical coupling of each of the first junction box and second junction box is one of a plug and a receptacle, and the second electrical coupling is the other one of a plug and a receptacle.

21. The modular light system of claim **16**, wherein the first electrical coupling of each of the first junction box and second junction box is a plug, and the second electrical coupling is a receptacle.

22. The modular light system of claim **16**, wherein each of the first and second light modules further comprise a lens and a gasket connectable respectively to the first heat sink and second heat sink to sealingly cover the first and second solid-state light emitting component.

23. The modular light system of claim **16**, further comprising a mount connected to the head module to secure the modular light system to a support.

24. The modular light system of claim **23**, wherein the mount comprises one of a wall pack mount, a knuckle surface mount, a knuckle slip-fit mount, a pole mount and a trunnion mount.

25. The modular light system of claim **16**, further comprising a sensor in the base module and configured to detect changes in an environmental condition.

26. The modular light system of claim **25**, wherein the sensor is configured to detect changes in ambient light.

27. The modular light system of claim **16**, further comprising drive circuitry in the head module.

28. The modular light system of claim **16**, further comprising control circuitry in the base module.

29. The modular light system of claim **16**, wherein the base module has a connection for power input to the modular light system to provide power to the first solid-state light emitting component.

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